

ABSTRACT OF THE DISCLOSURE

Improved systems, devices, and methods for delivering cryogenic cooling fluid to cryosurgical probes such as cryosurgical endovascular balloon catheters take

5 advantage of the transients during the initiation and termination of cryogenic fluid flow to moderate the treatment temperatures of tissues engaged by the probe. A flow limiting element along a cryogenic fluid path intermittently interrupts the flow of cooling fluid, often cycling both the fluid flow and treatment temperature. This can maintain the tissue treatment temperature within a predetermined range which is above the treatment temperature provided
10 by a steady flow of cryogenic fluid. In another aspect, room temperature single-use cooling fluid cartridges are filled with a sufficient quantity of cryosurgical fluid to effect a desired endovascular cryosurgical treatment.

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